



## **Deep learning for weather forecasting? A proof of principle.**

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In recent years, deep learning has shown marvelous results in particular in image recognition and image processing. Spatially extended complex systems such as earth atmosphere and its dynamics in terms of spatial fields give rise to visually interpretable patterns. This raises the question whether deep learning and its emerging visual intelligence could in principle be exploited for prediction in such systems. In this paper we explore this question in a controlled environment with a global atmosphere model that serves as ground truth. With this model data has been generated, and with this data a deep convolutional neural network has been trained. Prediction performance of the neural network has been assessed on independent runs of the atmosphere model. Results are promising: the prediction skill of the neural network is comparable to the skill of imperfect models governed by the ground truth dynamical equations with slightly perturbed model parameters.